

21. ☒ The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO **\$1000.00**International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO **\$860.00**International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$710.00**International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$690.00**International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4) **\$100.00****ENTER APPROPRIATE BASIC FEE AMOUNT =****CALCULATIONS PTO USE ONLY**\$ **860.00**Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(e)).\$ **0.00**

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$
Total claims	13 -20 =	0	x \$18.00	\$ 0.00
Independent claims	1 -3 =	0	x \$80.00	\$ 0.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$270.00	\$ 0.00

TOTAL OF ABOVE CALCULATIONS =\$ **860.00**☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above
are reduced by 1/2.\$ **0.00****SUBTOTAL =**\$ **860.00**Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).\$ **0.00****TOTAL NATIONAL FEE =**\$ **860.00**Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +\$ **40.00****TOTAL FEES ENCLOSED =**\$ **900.00**Amount to be
refunded: \$

charged: \$

a. ☐ A check in the amount of \$ _____ to cover the above fees is enclosed.b. ☒ Please charge my Deposit Account No. 13-3848 in the amount of \$ 900.00 to cover the above fees. A duplicate copy of this sheet is enclosed.c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. 13-3848. A duplicate copy of this sheet is enclosed.d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. Credit card
information should not be included on this form. Provide credit card information and authorization on PTO-2038.**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

**00157**

PATENT TRADEMARK OFFICE

SIGNATURE

James R. Franks

NAME

42,552

REGISTRATION NUMBER

Process for the production of low-viscosity water-soluble cellulose ethers.

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The technological properties of cellulose ethers are highly dependent on the viscosity of their solutions. Although primarily medium-viscosity cellulose ethers, i.e. those with average molecular weight are processed, high- and low-viscosity cellulose ethers have nevertheless also achieved importance.

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Low-viscosity cellulose ethers, which also have a low molecular weight in comparison with medium- and high-viscosity cellulose ethers, can in principle be manufactured in two different ways. Either a low-molecular alkali cellulose is taken as the basis and etherified, or a finished cellulose ether is broken down to the desired molecular weight.

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Using a low-molecular alkali cellulose as the basis and producing a cellulose ether by etherification makes the subsequent cleaning process more difficult. The cellulose ether contains a considerable number of short-chain components, which are swollen greatly or washed out by the washing media.

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The second possible method mentioned, of breaking down higher-molecular cellulose ethers into low-molecular, low-viscosity cellulose ethers can be achieved by the action of oxidising agents, for example hypochlorite or hydrogen peroxide.

The oxidative decomposition of high-viscosity cellulose ethers can be carried out after the cleaning process. This avoids washing losses and difficulties during the washing process.

The specifications listed below give a summary of the processes currently used to break down high-viscosity cellulose ethers after etherification and washing:

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